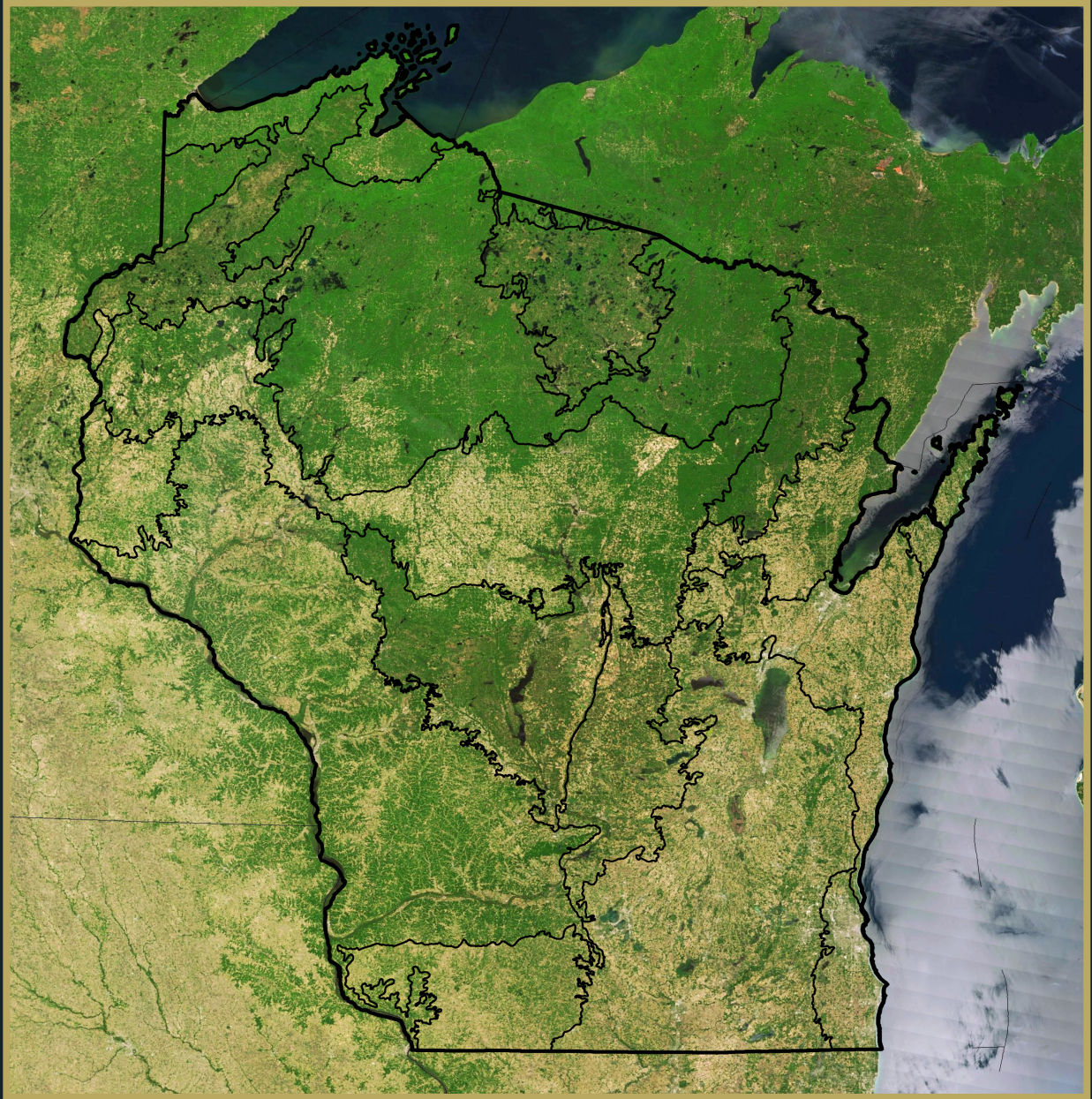


The Ecological Landscapes of Wisconsin



An Assessment of Ecological Resources
and a Guide to Planning Sustainable Management

Wisconsin Department of Natural Resources

Where to Find the Publication

The *Ecological Landscapes of Wisconsin* publication is available online, in CD format, and in limited quantities as a hard copy. Individual chapters are available for download in PDF format through the DNR website (<http://dnr.wi.gov/>, keyword “landscapes”). The introductory chapters (Part 1) and supporting materials (Part 3) should be downloaded along with individual ecological landscape chapters in Part 2 to aid in understanding and using the ecological landscape chapters. In addition to containing the full chapter of each ecological landscape, the website highlights key information such as the ecological landscape at a glance, Species of Greatest Conservation Need, natural community management opportunities, general management opportunities, and ecological landscape and Landtype Association maps (Appendix K of each ecological landscape chapter). These web pages are meant to be dynamic and were designed to work in close association with materials from the Wisconsin Wildlife Action Plan as well as with information on Wisconsin’s natural communities from the Wisconsin Natural Heritage Inventory Program.

If you have a need for a CD or paper copy of this book, you may request one from Dreux Watermolen, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707.

Funding

Funding for this project and publication of this report was provided by the Wisconsin Department of Natural Resources Divisions of Forestry, Lands, and Enforcement and Science; by grants from the Wisconsin Wildlife Action Plan Fund; and in part by funds from the Federal Aid to Wildlife Restoration Act under Pittman-Robertson Project W-160-P.



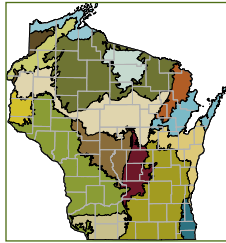
Suggested Citation

Wisconsin Department of Natural Resources. 2015. *The ecological landscapes of Wisconsin: An assessment of ecological resources and a guide to planning sustainable management*. Wisconsin Department of Natural Resources, PUB-SS-1131 2015, Madison.

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to the Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.

This publication is available in alternative format (large print, Braille, audio tape, etc.) upon request. Please call the Wisconsin Department of Natural Resources, Bureau of Environmental Analysis and Sustainability, at 608-221-6320 for more information.

Cover image: Wisconsin with clear skies created from Terra satellite data collected in June 2003. Ecological landscape boundaries shown in black. Satellite image courtesy of Liam Gumley, Space Science and Engineering Center, University of Wisconsin-Madison.



The Ecological Landscapes of Wisconsin

**An Assessment of Ecological Resources
and a Guide to Planning Sustainable Management**



Wisconsin Department of Natural Resources

**P.O. Box 7921
Madison, WI 53707**

2015

PUB-SS-1131 2015

Authors

Jerry Bartelt, Science Services (retired). Prepared the fauna, climate, integrated opportunities, and some of the natural and human disturbance sections of the ecological landscape chapters, parts of Chapters 1–6, reviewed and edited the document, and coordinated the peer review and overall project.

Owen Boyle, Natural Heritage Conservation. Assisted with the preparation of ecological landscape chapters, reviewed and edited portions of the document, and provided administrative support.

Eric Epstein, Natural Heritage Conservation (retired). Prepared the flora, natural communities, and management opportunities sections in the ecological landscape chapters and parts of Chapters 1–6, prepared Chapter 7, “Natural Communities, Aquatic Features, and Selected Habitats of Wisconsin,” reviewed and edited the document, located and placed the photos in the publication, and prepared photo captions.

Vern Everson, Forestry (retired). Prepared the socioeconomic sections of the publication.

Drew Feldkirchner, Natural Heritage Conservation. Prepared the section on conservation design in Chapter 1 and the assessment of northern forest communities in

Chapter 2, reviewed and edited text, provided graphics, and assisted in finding and providing photos to illustrate the publication.

Colleen Matula, Forestry – Northern Region. Prepared invasive species and natural and human disturbance sections for some ecological landscape chapters.

Eunice Padley, Forestry and Science Services (now at Natural Resources Conservation Service, Washington D.C.). Prepared the physical environment and some of the natural and human disturbance sections in the ecological landscape chapters and prepared the “Changes during the Holocene” section in Chapter 4 as well as reviewed and edited much of the document.

Jeff Schimpff, Environmental Analysis and Sustainability (retired). Prepared the sections on hydrology and aquatic fauna in the ecological landscape chapters and the aquatic and wetland sections in Chapters 2–6 as well as researched aquatic resources topics and solicited input from the various Wisconsin DNR water-related programs.

Andy Stoltman, Forestry. Prepared the sections on vegetation and land cover and the American Indian sections in the ecological landscape chapters, did the cartography, and conducted data analyses for the publication.



Contents

PART 1: INTRODUCTORY MATERIAL

| | |
|---|-----|
| Introduction (PUB-SS-1131A 2015). | A-1 |
| Chapter 1: Principles of Ecosystem and Landscape-scale Management (PUB-SS-1131B 2015). | B-1 |
| Chapter 2: Assessment of Current Conditions (PUB-SS-1131C 2015). | C-1 |
| Chapter 3: Comparison of Ecological Landscapes (PUB-SS-1131D 2015). | D-1 |
| Chapter 4: Changes and Trends in Ecosystems and Landscape Features (PUB-SS-1131E 2015). | E-1 |
| Chapter 5: Current and Emerging Resource Issues (PUB-SS-1131F 2015). | F-1 |
| Chapter 6: Wisconsin's Ecological Features and Opportunities for Management (PUB-SS-1131G 2015). | G-1 |
| Chapter 7: Natural Communities, Aquatic Features, and Selected Habitats of Wisconsin (PUB-SS-1131H 2017). | H-1 |
| Future Needs (PUB-SS-1131I 2015). | I-1 |

PART 2: ECOLOGICAL LANDSCAPE ANALYSES

| | |
|--|-----|
| Chapter 8: Central Lake Michigan Coastal Ecological Landscape (PUB-SS-1131J 2015). | J-1 |
| Chapter 9: Central Sand Hills Ecological Landscape (PUB-SS-1131K 2015). | K-1 |
| Chapter 10: Central Sand Plains Ecological Landscape (PUB-SS-1131L 2015). | L-1 |
| Chapter 11: Forest Transition Ecological Landscape (PUB-SS-1131M 2015). | M-1 |
| Chapter 12: North Central Forest Ecological Landscape (PUB-SS-1131N 2015). | N-1 |
| Chapter 13: Northeast Sands Ecological Landscape (PUB-SS-1131O 2015). | O-1 |
| Chapter 14: Northern Highland Ecological Landscape (PUB-SS-1131P 2015). | P-1 |
| Chapter 15: Northern Lake Michigan Coastal Ecological Landscape (PUB-SS-1131Q 2015). | Q-1 |
| Chapter 16: Northwest Lowlands Ecological Landscape (PUB-SS-1131R 2015). | R-1 |
| Chapter 17: Northwest Sands Ecological Landscape (PUB-SS-1131S 2015). | S-1 |
| Chapter 18: Southeast Glacial Plains Ecological Landscape (PUB-SS-1131T 2015). | T-1 |
| Chapter 19: Southern Lake Michigan Coastal Ecological Landscape (PUB-SS-1131U 2015). | U-1 |
| Chapter 20: Southwest Savanna Ecological Landscape (PUB-SS-1131V 2015). | V-1 |
| Chapter 21: Superior Coastal Plain Ecological Landscape (PUB-SS-1131W 2015). | W-1 |
| Chapter 22: Western Coulees and Ridges Ecological Landscape (PUB-SS-1131X 2015). | X-1 |
| Chapter 23: Western Prairie Ecological Landscape (PUB-SS-1131Y 2015). | Y-1 |

PART 3: SUPPORTING MATERIALS (PUB-SS-1131Z 2015)

| | |
|--|------|
| Appendix A. Ecosystem Management Planning Team Members | Z-1 |
| Appendix B. Abbreviations Used in the Book. | Z-3 |
| Appendix C. Data Sources Used in the Book. | Z-5 |
| Appendix D. Descriptions of Ecosystem Management Concepts | Z-9 |
| Appendix E. Opportunities for Sustaining Natural Communities in Each Ecological Landscape. | Z-13 |
| Appendix F. Some Important Natural Resource Plans and Assessments | Z-19 |
| Appendix G. Statewide Maps | Z-26 |
| Appendix H. Forest types That Were Combined into Forest Type Groups Based on Forest Inventory and Analysis (FIA) Data | Z-27 |
| Glossary | Z-28 |
| Recommended Readings and References | Z-39 |
| About the Authors | Z-46 |